



Writing for a Purpose: **Journal Writing** - Asking Questions to Revise Writing

MATHEMATICS Grades 10 - 12

Students ask other students questions and provide specific feedback about other students' writing. Students gain a sense of taking personal responsibility for their writing.

Purpose

- Discuss the ideas in a piece of writing in order to refine and revise the ideas.

Payoff

Students will:

- engage in meaningful discussion and deepen understanding of mathematics.
- develop over time into supportive writing partners with peers.
- recognize that the writer owns the writing and that the collaboration helps other students to recognize unintended omissions and inconsistencies.

Tips and Resources

- There are examples of journals using the Report and Application writing forms. (See Teacher Resource: *Writing for a Purpose – Journal Writing*.)
- This specific resource is written to help edit a personal journal. To modify this resource for class journal and group journal writing, please see the Teacher Resource: *Journal Writing – Linking Process, Strategies and Developmental Stages*.
- The writer should be the first to amend or add ideas rather than having another person suggest a solution. When other students ask questions or provide open-ended prompts, they give the writer an opportunity to think deeply about a piece of writing and to gain a better sense of how to tailor it to make it both a more formal piece of communication and a better solution.
- Revising and editing a solution to a mathematics problem differs from revising and editing a literary piece in at least two ways. The first difference is that it is not the power of words, expressions, or style that convinces the reader but rather the logic and the reasoning must be clear. The second difference is that mathematical communication has its own syntax and conventions which must be adhered to if correctness as well as clarity is to be presented.
- See the Mathematics exemplars (*The Ontario Curriculum – Mathematics Exemplars*) for samples of student work at levels 1, 2, 3 and 4 to use as examples of both good solutions and of solutions needing revision. These are available both on-line at <http://www.edu.gov.on.ca> and in hard-copy form from The Queen's Printer.
- See also EQAO Release Materials from the Grade 9 testing for other examples. These are available on-line at http://www.eqao.com/06ede/ed6_1e.asp
- To view the prompts and questions see Student Resource: *Asking Questions to Revise Writing*.

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Notes

| What teachers do | What students do |
|---|--|
| Before <ul style="list-style-type: none"> Decide on a journal form. Prepare a writing sample using the journal form. Read the sample aloud, asking students to listen carefully (to hear “how it sounds”) while following with their eyes. Ask students to identify areas of concern or confusion. Model the use of questions and prompts, asking students to consider the purpose of these questions and prompts. | <ul style="list-style-type: none"> Look and listen for areas of confusion or concern in the writing sample. Offer suggestions for areas of concern or confusion. Suggest the purposes or effects of the questions and prompts. |
| During <ul style="list-style-type: none"> Distribute the Student Resource, <i>Asking Questions to Revise Writing</i>, and read it the class. Put students in conferencing groups of three or four to read each other’s writing. Ask students to share their piece of writing with at least two people in their group. Encourage students to use one or two of the prompts or questions. Provide 20 to 30 minutes for this exercise. | <ul style="list-style-type: none"> Exchange writing drafts with another group member. Take turns reading the writing aloud to each other and asking questions or providing prompts. Exchange writing drafts with a different group member. Take turns reading the writing aloud to each other and asking questions or providing prompts. |
| After <ul style="list-style-type: none"> Engage students in a whole-class discussion about the process. How did they feel about using the questions or prompts? How helpful was the process in setting a direction for revising their writing draft? Direct students to revise their writing draft. | <ul style="list-style-type: none"> Participate in a class discussion. Revise own writing drafts based on the prompts and questions from their partners. |



Asking Questions to Revise Writing – Sample Questions

Your job as a revising partner is a very important one. You can help the writer by:

- giving the writer a sense of how completely the task has been accomplished;
- praising proper form, use of required convention and/or reasoning;
- identifying poor form;
- identifying areas of confusion;
- targeting statements that are not relevant;
- targeting conclusions that do not address the question;
- targeting conclusions that are not supported with evidence.

The writer owns the writing, and should not feel that your suggestions or ideas are being imposed as THE solution. The best way to help your revising partner is to phrase your comments as open-ended prompts, as questions, or as a combination of an observation and a question. Some suggestions are below.

- Begin by using any “praise” statements when you can.
- If you can’t use the “praise” suggestions, you should use the “questions.”

Asking Questions to Revise Writing: Samples A, B and C

Sample A: MFM 2P

We have been studying functions in many ways. Functions can be written as an equation, a table of values, or as a graph. There are also different ways to determine if each description is linear.

A table of values records the points of a function. Subtract pairs of y values to record first differences. A linear function will always have the same difference for every pair of y values. A graph will be straight if it is linear. An equation will have the degree of one if it is linear.

Sample B: MCR 3U

Many situations can be modeled using a quadratic formula. For instance, a shopkeeper may use an equation to determine the store’s profit. If that were the case, the clerk would need to understand some characteristics of a quadratic function.

When writing the equation, the clerk would have to pick an independent variable like t , for time, and a dependent variable like profit, represented by $p(t)$. Using that equation the manager could determine when the store made the most profit (vertex) and what the sales would be at a specific time. The store owner could also see when the sales are the lowest in an attempt to discover the reason.

Using a quadratic function to model store profit would be a good idea. It provides the store owner and manager with valuable information that they could use to change the way they run the store.

Sample C: MDM 4U

A scatter plot is used by social scientists to understand large amounts of data. Once the data is visually displayed, many interest groups can benefit from knowing if the data shows any patterns. Once patterns are established, any predictions made using the data will affect the behavior of different groups of people.



For example, a study of moderate wine consumption and deaths from heart disease would attract the attention of advertisers, the medical community, governments and entrepreneurs. One such study out of the University of California has data to show a steady decline of heart disease deaths as the consumption of alcohol increases. This strong negative trend is evident on the scatter plot with data forming a fairly linear pattern.

With such a strong negative correlation, there is a temptation to make predictions relating wine consumption and heart disease deaths. A causal relationship however has not been clearly established. Therefore, the study simply informs doctors that drinking wine in moderation is not a health risk and entrepreneurs along with advertisers can market wine to an older age group. Governments may then want to study the effects of wine consumption on workplace absenteeism and the demands for addiction services.

As with all studies, a correlation between two variables is always intertwined with other uncontrolled variables. More research must be done on this subject but a scatter plot has helped clarify some of the study's conclusions

| Praise | Questions |
|---|--|
| <ul style="list-style-type: none"> Your solution is complete. Your solution uses proper form. Your conclusion is consistent with the question being asked. Your work is clearly laid out with your steps outlined. You have used all the necessary conventions. You have made good use of mathematical terminology. Your strategy is reasonable. You were able to consider more than one possible solution. | <ul style="list-style-type: none"> Your solution doesn't seem to be complete: Have you defined the variable? Have you included a concluding statement? Is your conclusion connected to the numerical values that you worked out? Have you shown all of your steps? How could you improve the 'form' of your solution? Do you have more than one = sign on a line? Have you carried all of the expression from line to line? Have you used the appropriate units? What conclusion would better connect to the question being asked? Should the numerical answer you calculated be rounded? If yes, up or down? What comments could you add to clearly identify the steps you took? How could you organize/space your solution to help the reader follow your thinking? Could you include a diagram, chart or graph to support your thinking? What conventions have to be paid attention to in your solution (e.g., units, = sign position, rounding, labels, and scales on graphs / diagrams, symbols)? What mathematical terminology and symbols can you use in your solution? Does your strategy produce an answer to the question being asked? Does your diagram/graph reflect the information given in the problem? Did you choose appropriate values from the given chart/graph? Did you choose an appropriate formula? Can this problem have more than one solution? |